

IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. and 2. (Canceled)

3. (Currently Amended) ~~The A filter processing apparatus, according to claim 1,~~ having a plurality of arithmetic units, each arithmetic unit comprising:

data storage means for generating data obtained by delaying input data by a predetermined amount in accordance with a type of data;

multiplication means for multiplying data, including the input data and the generated data, by a predetermined coefficient;

addition means for adding a product obtained by said multiplication means to the input data; and

~~wherein each of said plurality of arithmetic units further comprises~~
~~switching means for switching data to be input to the arithmetic unit,~~
~~and the plurality of wherein said~~ switching means are switched by an
external control signal to switch a filter process between forward and inverse filter
processes, and said plurality of arithmetic units are cascaded to execute a filter process for
data inputted to a first stage of arithmetic unit.

4. (Original) The apparatus according to claim 3, wherein the external control signal inverts a sign of the predetermined coefficient in accordance with switching of said switching means.

5. (Currently Amended) The apparatus according to claim ~~[[1]]~~ 3, further comprising scaling means for executing a scaling process of a filter processing result of the arithmetic unit.

6. (Currently Amended) The apparatus according to claim ~~[[1]]~~ 3, wherein the input data contains the externally input data, the sum obtained by said addition means, and the delayed data.

7. (Currently Amended) The apparatus according to claim ~~[[1]]~~ 3, wherein the plurality of data further contains the externally input data and the delayed data.

8. (Currently Amended) The apparatus according to claim ~~[[1]]~~ 3, wherein the data inputted to the first stage of arithmetic unit which ~~constitute~~ comprises said cascaded arithmetic units is data that forms an image which is to undergo the forward filter process.

9. (Currently Amended) The apparatus according to claim ~~[[1]]~~ 3, wherein the filter process includes discrete wavelet transformation.

10. (Currently Amended) The apparatus according to claim [[9]] 3,
wherein the filter process follows a method indicated by a lifting scheme.

11. (Currently Amended) The apparatus according to claim [[1]] 3,
wherein ~~said~~ the predetermined coefficient is a multiplication coefficient in a lifting
arithmetic operation.

12. and 13. (Canceled)

14. (Currently Amended) A method of controlling a filter processing
apparatus having a plurality of arithmetic units, comprising:

a method of controlling an arithmetic unit, comprising

a data storage step, of generating data obtained by delaying input
data by a predetermined amount in accordance with a type of data;

a multiplication step, of multiplying data, including the input data
and the generated data, by a predetermined coefficient,

an addition step, of adding a product obtained in said multiplication
step to the input data; and

~~The method according to claim 12, further comprising the~~

~~a switching step, of switching data to be input to the arithmetic unit;~~

[[,]]

~~and in that the plurality of the~~ wherein said switching steps are

switched by a control mode signal to switch a filter process between forward and inverse filter processes, and said plurality of arithmetic units are cascaded to execute a filter process for data inputted to a first stage of said arithmetic unit.

15. (Currently Amended) The method according to claim [[12]] 14, further comprising ~~the~~ a scaling step, of executing a scaling process of a filter processing result of the arithmetic unit.

16. (Currently Amended) A storage medium that stores [[a]] program code which makes a computer, that loads said program code, function as a filter processing apparatus having a plurality of arithmetic units, comprising:

[[a]] program code which serves as an arithmetic unit and comprises
program code of a data storage step, of outputting, from
predetermined storage means, data obtained by delaying input data by a predetermined
amount in accordance with a type of data; and

[[a]] program code of [[the]] a multiplication step, of multiplying
~~input data, including the input data and the obtained data,~~ by a predetermined coefficient,

[[a]] program code of [[the]] an addition step, of adding a product
[[of]] obtained in said the multiplication step to ~~a plurality of data including some of the~~
input data; [[,]] and

~~a program code of the data storage step of outputting, from
predetermined storage means, data obtained by delaying the input data by a predetermined
amount in accordance with a type of data, and~~

a switching step, of switching data to be input to the arithmetic unit,

in that wherein said switching steps are switched by an external
control signal to switch a filter process between forward and inverse filter processes, and
said plurality of arithmetic units are cascaded to execute a filter process for data inputted to
a first stage of arithmetic unit a filter process is executed for externally input data using
said program code serving as the arithmetic unit a plurality of number of times.

17. - 35. (Canceled)

36. (New) A filter processing apparatus having a plurality of arithmetic
units, each arithmetic unit comprising:

input means for inputting first and second data which have a
spatially adjacent positional relationship in a data group including the first and second data;

storing means for storing the first data and then outputting third data,
the second and third data having a spatially adjacent positional relationship in the data
group, obtained by delaying the first data by a predetermined amount;

multiplication means for multiplying the first and third data by a
predetermined coefficient; and

addition means for adding a product obtained by said multiplication means to the second data,

wherein the filter processing apparatus executes a filter processing for external input data using the plurality of arithmetic units.

37. (New) A method of controlling a filter processing apparatus having a plurality of arithmetic units, comprising:

a method of controlling an arithmetic unit, comprising

an input step, of inputting first and second data which have a spatially adjacent positional relationship in a data group including the first and second data;

a storing step, of storing the first data and then outputting third data, the second and third data having a spatially adjacent positional relationship in the data group, obtained by delaying the first data by a predetermined amount;

a multiplication step, of multiplying the first and third data by a predetermined coefficient; and

an addition step, of adding a product of said multiplication step to the second data,

wherein the filter processing apparatus executes a filter processing for external input data using the plurality of arithmetic units.

38. (New) A storage medium that stores program code which makes a computer, that loads said program code, function as a filter processing apparatus having a plurality of arithmetic units, comprising:

program code which serves as an arithmetic unit and comprises

program code of an input step, of inputting first and second data which have a spatially adjacent positional relationship in a data group including the first and second data;

program code of a storing step, of storing the first data and then outputting third data, the second and third data have spatially adjacent positional relationship in the data group, obtained by delaying the first data by a predetermined amount;

program code of a multiplication step, of multiplying the first and third data by a predetermined coefficient; and

program code of an addition step, of adding a product of said multiplication means to the second data,

wherein the filter processing apparatus executes a filter processing for external input data using the plurality of arithmetic units.

39. (New) A filter processing apparatus having a plurality of arithmetic units, each arithmetic unit comprising:

input means for inputting first and second data which have a spatially adjacent positional relationship in a data group including the first and second data;

multiplication means for outputting third data obtained by multiplying the first data by a predetermined coefficient;

first addition means for outputting fourth data obtained by adding the third data to the second data;

storing means for outputting fifth data obtained by delaying the fourth data by a predetermined amount; and

second addition means for outputting sixth data obtained by adding the third data to the fifth data,

wherein the filter processing apparatus executes a filter processing for external input data using the plurality of arithmetic units.

40. (New) A method of controlling a filter processing apparatus having a plurality of arithmetic units, comprising:

a method of controlling an arithmetic unit, comprising

an input step, of inputting first and second data which have a spatially adjacent positional relationship in a data group including the first and second data;

a multiplication step, of outputting third data obtained by multiplying the first data by a predetermined coefficient;

a first addition step, of outputting fourth data obtained by adding the third data to the second data;

a storing step, of outputting fifth data obtained by delaying the fourth data by a predetermined amount; and

a second addition step, of outputting sixth data obtained by adding the third data to the fifth data,

wherein the filter processing apparatus executes a filter processing for external input data using the plurality of arithmetic units.

41. (New) A storage medium that stores program code which makes a computer, that loads said program code, function as a filter processing apparatus having a plurality of arithmetic units, comprising:

program code which serves as an arithmetic unit and comprises

program code of an inputting step, of inputting first and second data which have a spatially adjacent positional relationship in a data group including the first and second data;

program code of a multiplication step, of outputting third data obtained by multiplying the first data by a predetermined coefficient;

program code of a first addition step, of outputting fourth data obtained by adding the third data to the second data;

program code of a storing step, of outputting fifth data obtained by delaying the fourth data by a predetermined amount; and

second addition means for outputting sixth data obtained by adding the third data to the fifth data,

wherein the filter processing apparatus executes a filter processing for external input data using the plurality of arithmetic units.